

**East and Southern African Annual Review and Planning Conference Entebbe
Uganda 23rd – 27th July 2007**

1. Introduction

Malaria is benefiting from increased coverage politically in the media and amongst the general public. The increased profile of the disease has been concomitantly met with increased funding commitments and many countries have experienced dramatic declines in morbidity and mortality. However, despite the increased attention, malaria continues to be the leading cause of death and morbidity in many African countries.

The disease causes over 500 million people to become severely ill and it is estimated that at least one million people die from the disease every year; this is in spite of the fact that the disease is entirely preventable and curable. Approximately ninety per cent of the deaths occur in sub-Saharan Africa, mostly amongst young children and pregnant women. Every day, close to 3,000 children die of malaria, which equates to a child dying every 30 seconds.

The high disease burden is due to several factors, among them the extreme poverty in many parts of Africa and the consequent lack of health services and adequate mosquito control programs. In addition Africa hosts the highly efficient malaria vector, *Anopheles gambiae*, as well as the most severe form of malaria, *Plasmodium falciparum*. In many areas of Africa the parasites have developed resistance to the chloroquine and sulphadoxine-pyrimethamine, which are both cheap and easy to administer. This means that most countries are forced to change treatment protocols to artemisinin-based combination therapies (ACTs), which are considerably more expensive. The process of changing drug therapy is also expensive and often difficult. The combination of drug and insecticide resistance, poverty, highly efficient malaria vectors means that malaria control is extremely challenging. To make matters worse the living organism is constantly evolving rendering proven control methods inadequate. Fortunately for the time being, man has been able to stay one step ahead of the evolutionary process. We therefore have the tools to fight the disease but constant vigilance of the available tools is imperative if we are to overcome the scourge of disease.

This year's East and Southern African Malaria Conference (ESAMC) was held in Entebbe Uganda and it was the second year where both east and southern African countries jointly met to discuss ways and means to overcome the burden of disease. In addition to the representatives from each of the 15 countries represented, a number of individuals from the private sector, including pesticide manufacturers and pharmaceutical manufacturers, attended the conference. The central theme of this year's annual malaria control meeting was accelerating access to proven malaria control interventions towards universal access.

Many of the worst affected African countries, which are located in the East and Southern regions of the continent, are increasingly recognising the importance a well-run vector control programmes, particularly with the use of indoor residual spraying. Furthermore,

there is increasing recognition of the importance of treating malaria with ACTs and many southern and east African countries have adopted these drugs as their first line treatment for malaria.

Most cases of malaria are diagnosed on the basis of clinical symptoms and treatment is presumptive, rather than based on laboratory confirmation. This is one of the major contributing factors to resistance build up. Indeed, resistance to chloroquine – the former treatment of choice – is widespread, with estimates of around 80% in countries where malaria continues to be a major killer. For this reason it is imperative to make the correct diagnosis of patients, based on blood slides or rapid diagnostic test kits, if we wish to see the outstanding results we have observed thus far with ACTs extend into the future.

Many south and east African countries have recognised the importance of forming cross-border initiatives with neighbouring countries. One of the successful initiatives is the Lubombo Spatial Development Initiative, which a cross-country collaboration between South Africa, Swaziland, Mozambique and Zimbabwe. Due to the high level of human traffic in these areas it was important to establish an integrated vector control programme.

2. Country Progress, Performance, Challenges and Lessons Learnt

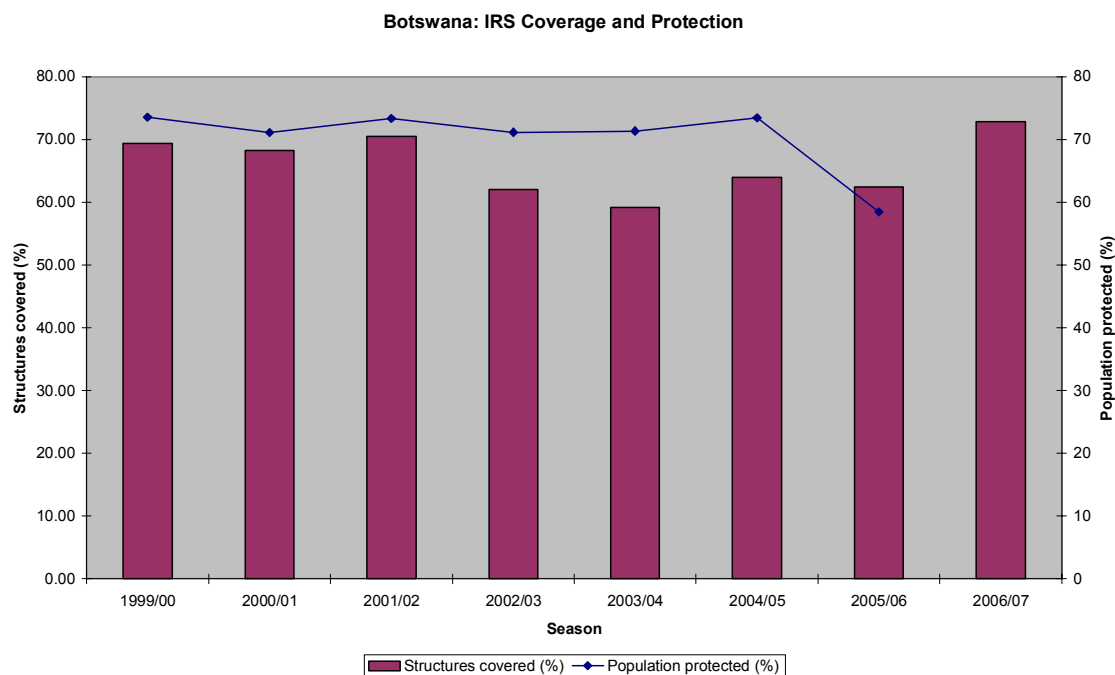
2.1 Botswana

Malaria transmission in Botswana is seasonal and closely related to the level of rainfall. Transmission is thus unstable and uneven with the entire population being at risk. There are three main epidemiological zones ranging from an endemic high transmission area in the North (where approximately 43% of the population lives) to non-endemic areas in the middle and south of the country with significant to low numbers of sporadic cases respectively. The 2006/2007 season was reportedly the best season for a number of years with 8,894 unconfirmed cases, 290 confirmed cases and 3 deaths.

Table 2.1 Malaria morbidity and mortality trends

Year	Unconfirmed cases	Confirmed cases	Deaths
2001	48,281	4,716	29
2002	28,907	1,588	23
2003	23,674	1,830	18
2004	22,404	3,453	19
2005	11,242	530	11
2006/2007	8,894	290	3

Indoor residual spraying has been conducted in Botswana since the 1950's and remains the primary form of vector control. Spray teams are constituted by local communities. Training is undertaken on yearly basis before the spray activity. IRS coverage improved from 63% to 73%. The percentage of population protected by IRS and the spray coverage can be seen in the table below.



Insecticide treated nets were adopted as a complimentary vector control intervention in 1997 but the take-up rate is still reportedly low and remains a challenge for Botswana. Insecticide treated net coverage ratios for high risk populations can be seen in the table below.

Table 2.2 Insecticide Treated Net Utilisation

Core Indicators	2002 Baseline Survey	2005 Survey Results
% household with at least one net	23%	49%
% under 5's who slept under a net	49%	31%
% under 5's who slept under a treated net	15%	15%
% pregnant women who slept under a net	26%	39%
% pregnant women who slept under a treated net	10%	16%

Botswana changed their drug policy from the Sulfadoxine Pyrimethamine (SP) to the artemisinin based combination therapy Artemether Lumefantrine (AL) in 2006/07 season.

2.2 Eritrea

Eritrea has three epidemiologically distinct strata namely: the coastal plains (0-1,000 metres), the western lowlands (700-1,500 metres) and the highlands (1,500-2,000 metres). The central, southern and western low lands are at risk from September through to November and the coastal plains are at risk from January through to March. Malaria is seasonal, focal and unstable and thus the risk for malaria epidemics is high. Eritrea also accommodates a large number of displaced populations due to border conflicts and thus there is a great deal of population mobility. A large number of the individuals have low immunity and are resistant to certain drugs.

Eritrea has an integrated vector control programme in place that utilises ITN's, IRS, larvaciding, drainage and source reduction.

Table 2.3: Eritrea Malaria Morbidity and Mortality Trends

Indicator	1999	2000	2001	2002	2003	2004	2005	2006
OPD cases	179,501	109,578	125,746	74,861	65,517	27,783	24,192	10,148
<5 malaria deaths	50	30	45	32	28	6	2	9
<5 case fatality rate	5.97	2.31	2.35	2.39	1.76	0.72	0.22	1.34
Total malaria deaths	176	85	129	85	70	16	32	25
Total case fatality rate	3.63	1.07	1.19	1.25	0.80	0.37	0.47	0.64

A total of 3,564 blood films were cross-checked in 2006.

Table 2.4: Eritrea Blood Film Analysis

	2004	2005	2006
False positive	3.52%	0.5%	1.1%
False negative	1.17%	0.37%	0.9%
Misclassified species	7.44%	2.57%	5%

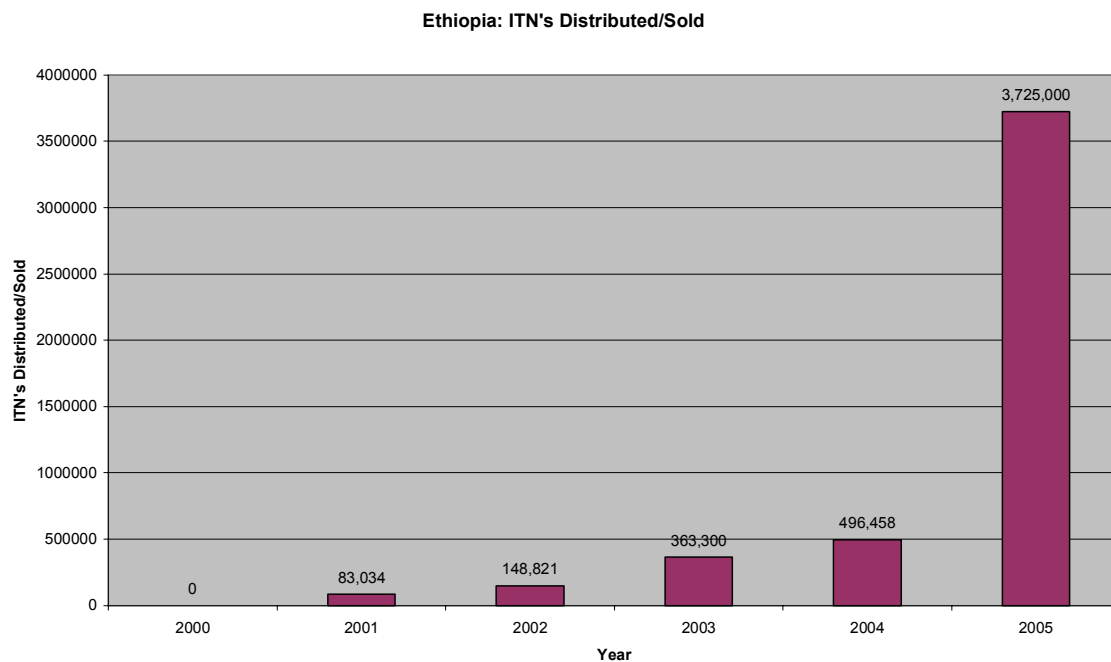
In the year 2000 malaria was the most common cause of inpatient deaths amongst adults and the third most common cause of inpatient deaths for children under the age of 5. In 2005 malaria had dropped to 10th position for adults and 9th position for children under the age of five. By the year 2006 malaria was no longer one of the top 10 causes of

inpatient deaths amongst adults but had relapsed to 8th position for children under the age of five.

2.3 Ethiopia

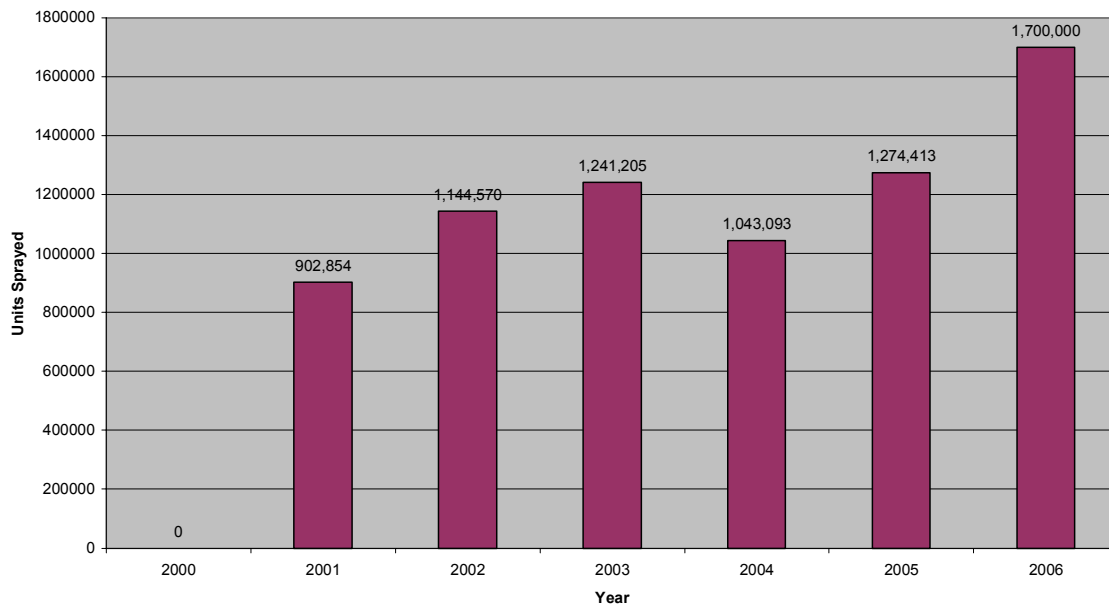
Altitude and climate are the most important determining factors of malaria in Ethiopia. Approximately three-quarters of Ethiopia fall's into malarial areas. Transmission is unstable and the country is prone to epidemics. Areas below 2,000 metres are malarious. 68 per cent of the population is at risk of malaria which equates to approximately 50 million people. Malaria is the leading cause of death and morbidity in Ethiopia and as such continues to be a major public health problem. In 2006 the disease accounted for 17.8% of all out-patient visits, 14.1% of all admissions and 21.8% of all in-patient deaths.

In the first six months of 2007, 9.1 million rapid diagnostic tests were distributed and 6.1 million ACT's were distributed. Ethiopia dramatically scaled up the distribution of long lasting insecticidal nets in 2005 and is continuing the expansion in distribution.



Ethiopia indicates that 1.7 million units were sprayed, which equates to 8.5 million people protected. But, considering the fact that approximately 50 million people are at risk and approximately 5.8 million cases are reported each year, it has to be said that this is relatively poor coverage. The country therefore plans to increase coverage from 30 to 60 per cent by 2008.

Ethiopia: Units Sprayed



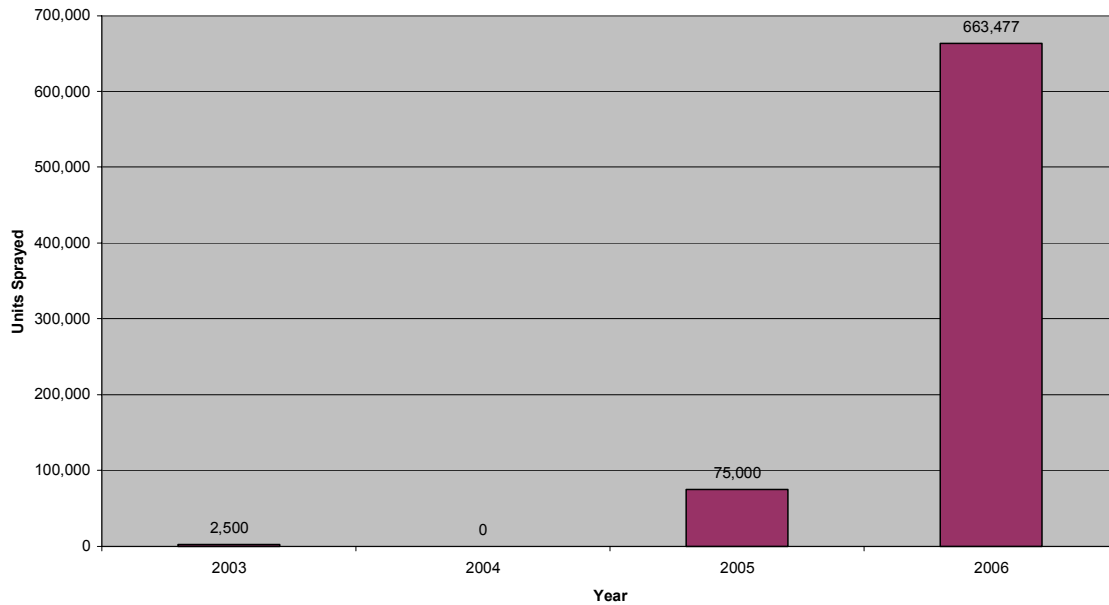
2.4 Kenya

Approximately 25 million out of the total population of 34 million Kenyans are at risk of contracting malaria. The disease kills about 34,000 children under the age of 5 every year. The disease accounts for 30 to 50 per cent of outpatient visits and 20 per cent of all hospital admissions. Malaria also accounts for approximately 170 billion lost working days per year and each family spends approximately USD20 per annum on treatment for malaria.

Kenya changed its drug treatment policy from chloroquine to sulfadoxine pyrimethamine in 1998 but high and widespread failures necessitated a change to an artemisinin based combination therapy and artemether lumefantrine was introduced in 2004; however, the policy was only implemented in 2006.

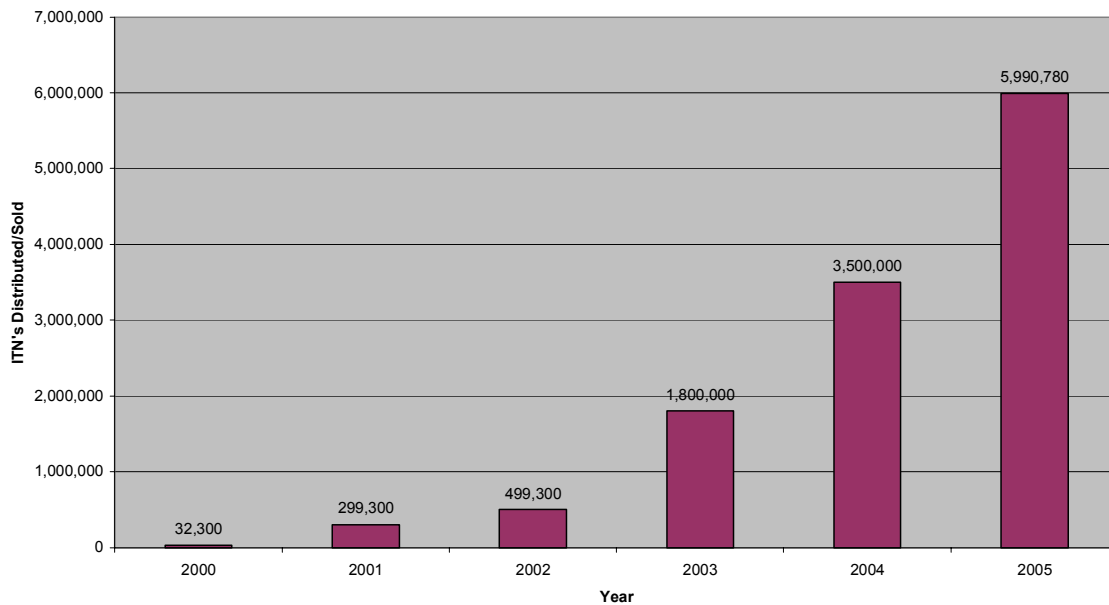
Kenya has scaled up its indoor residual spraying programme reaching 97.6% of the targeted area in 2007, up from 27.1% in 2005 and 32.5% in 2006. Although these figures appear encouraging it should be noted that the reported coverage pertains specifically to targeted areas and are not necessarily indicative of spray coverage for the entire population at risk.

Kenya: Units Sprayed



The use of long lasting insecticidal nets remains Kenya's primary intervention and the majority of the country's efforts go into mass distribution through private sector subsidised health clinics and more recently, free distribution to vulnerable target groups.

Kenya: ITN's Distributed/Sold



2.5 Madagascar

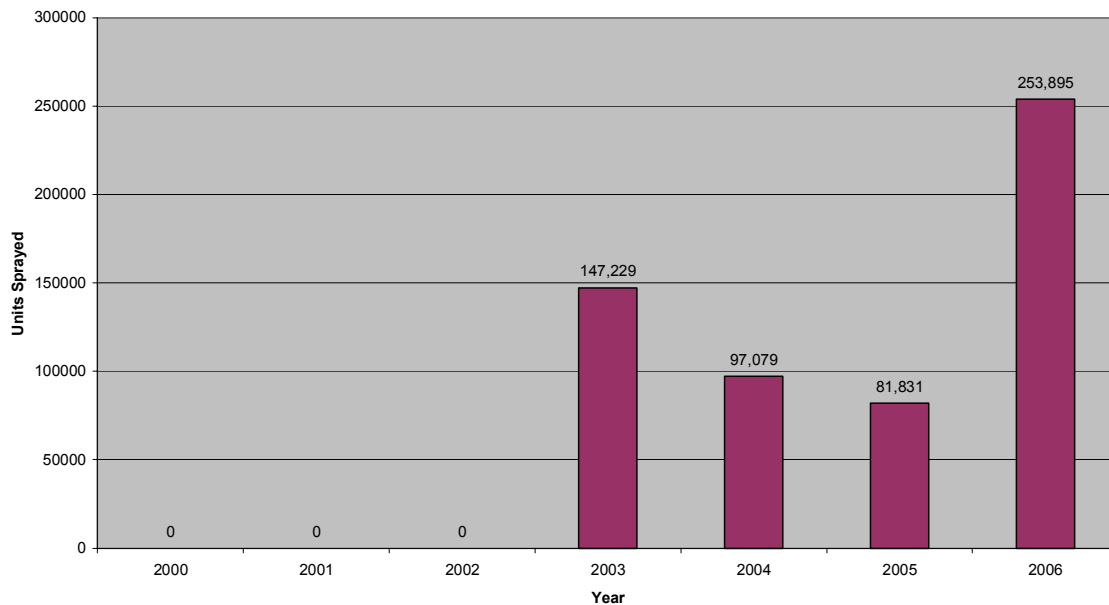
Malaria is a major public health issue in Madagascar with 92% of the population at risk. Madagascar reports that malaria as the second most common cause of morbidity in outpatients at health facilities and the primary cause of mortality for inpatients.

Table 2.5 Madagascar Malaria Morbidity and Mortality Trends

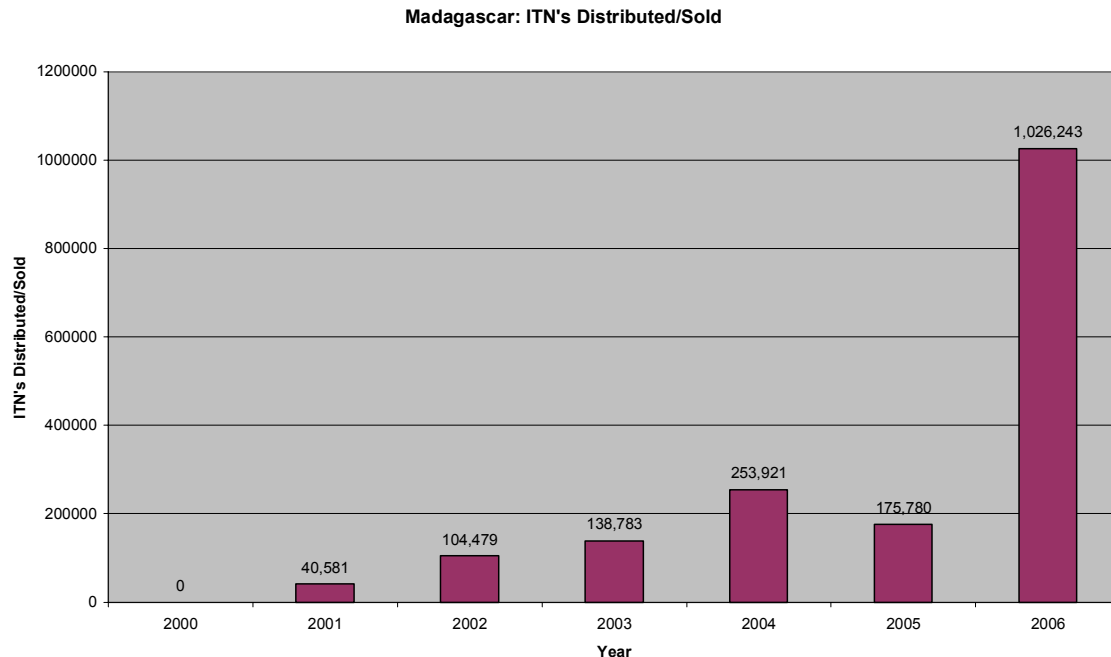
Year	Morbidity (presumptive malaria)	Incidence of severe malaria at hospital level	Mortality at hospital level	Case fatality rate (%)
2001	1,404,327	9,826	742	17.3
2002	1,527,504	8,730	575	14.8
2003	2,119,000	10,350	759	21.0
2004	1,458,428	10,123	747	17.5
2005	1,234,218	12,267	690	5.6

Madagascar has an indoor residual spraying program in the central highlands, the most severely affected area. During the 2006 spray season 253,895 households (~98%) were treated, effectively protecting over 1.2 million people. Seventeen tonnes of the insecticide alphacypermethrine (Fendona WP5) was used to treat the households.

Madagascar: Units Sprayed



Approximately 1 million insecticide treated nets were distributed in the malaria endemic areas.



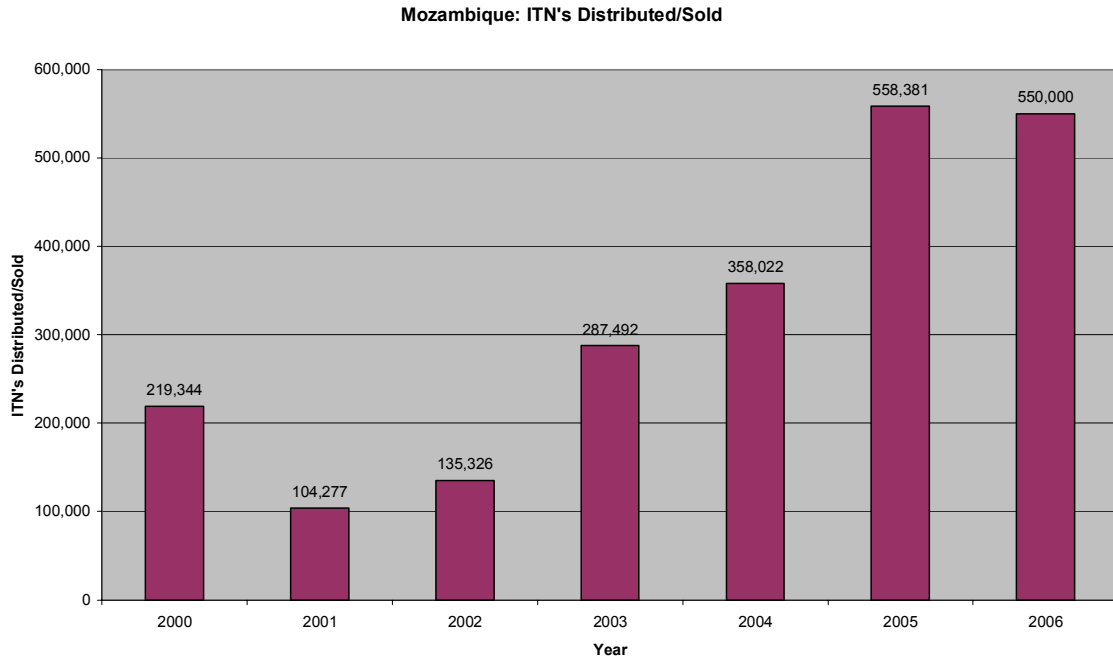
Although Madagascar changed its first line treatment policy to ACT's in 2006 the roll-out has been slow. The slow transition can be observed when one considers that only 18% of those suffering from malaria are able to access and use the correct treatment within 24 hours of the onset of symptoms.

2.6 Mozambique

Malaria continues to exert a significant toll on the people of Mozambique and is a major public health concern. Mozambique's malaria prevalence rate varies between 40% and 90%. In 2006, the disease accounted for about 6 million (40%) out-patients cases which equates to approximately 300 cases per 1000 population. This is an increase from about 3.5 million cases in 2000. However, it should be noted that the increase is believed to be a result of various factors including improved health surveillance and expansion of health services and not necessarily from increased malaria. The disease accounts for approximately 60% of all hospital admissions in children under the age of 5 years and 30% of all hospital deaths.

In the 2006/2007 season 49 districts in the country were covered by indoor residual spraying activities, representing an increase in coverage from 34% of the population in 2005/6 to about 42% in 2006/7 (covering about nine million people). The insecticide DDT was used in the 2006/7 spraying season in Maputo, Gaza, Inhambane and six districts of the Zambezia Province. The rest of the country used pyrethroids but DDT will be used throughout the country in 2007/8, except in areas where it is not appropriate such as western style houses.

Mozambique has distributed approximately 2,300,000 insecticide treated nets since 2000 in 9 provinces. The current ITN policy is that all ITN's (and LLINs) are distributed free through public health programmes. In general, the population coverage of treated nets is about 30% of the population or about 54% of under fives in unsprayed areas.



In 2004 the ACT artesunate (AS) + sulfadoxine pyrimethamine (SP) was introduced. However, due to wide scale resistance to the monotherapy SP the new first line treatment for 2007 will be artemether lumefantrine (AL).

2.7 Namibia

Namibia has a population of approximately 2.1 million people. Over 67% of the population reside in malarious areas. Malaria accounts for approximately 26% of out-patient cases (450,000 cases), 21% of all hospital admissions (30,000 cases) and 8.6% of all deaths (1,300). It is estimated that 15% of all childhood deaths are due to malaria.

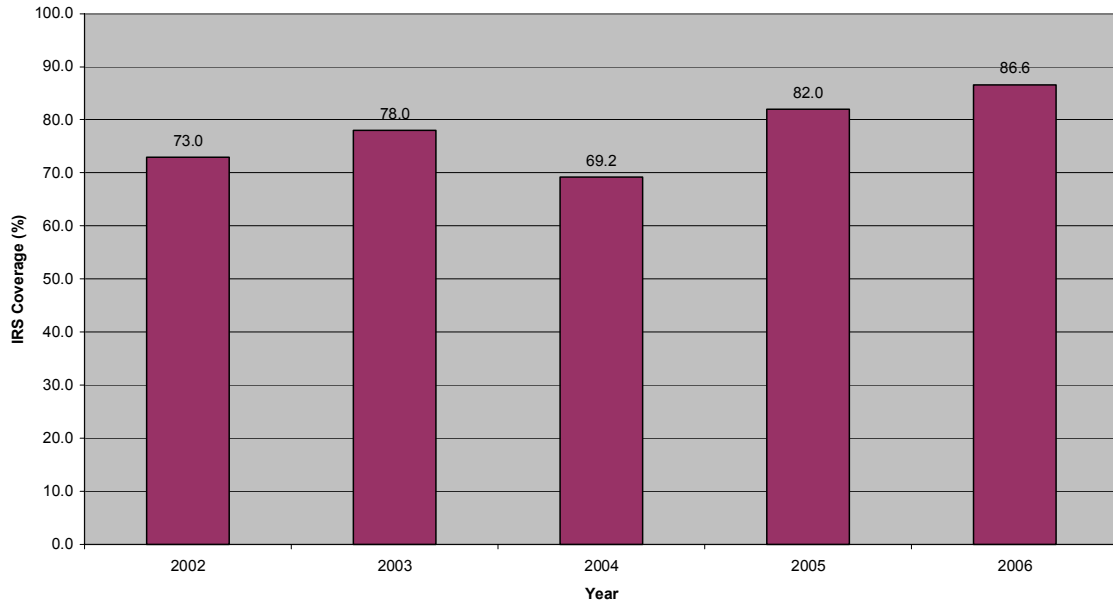
Table 2.6: Malaria incidence and mortality per year

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Incidence per 1,000 population	207.6	227.7	200.0	160.9	238.2	402.6	233.7	216.3	280.2	175.9	138.8
Malaria mortality rate per 100,000 population	30.2	33.6	19.2	24.0	54.8	95.6	54.7	56.5	59.4	64.4	59.3

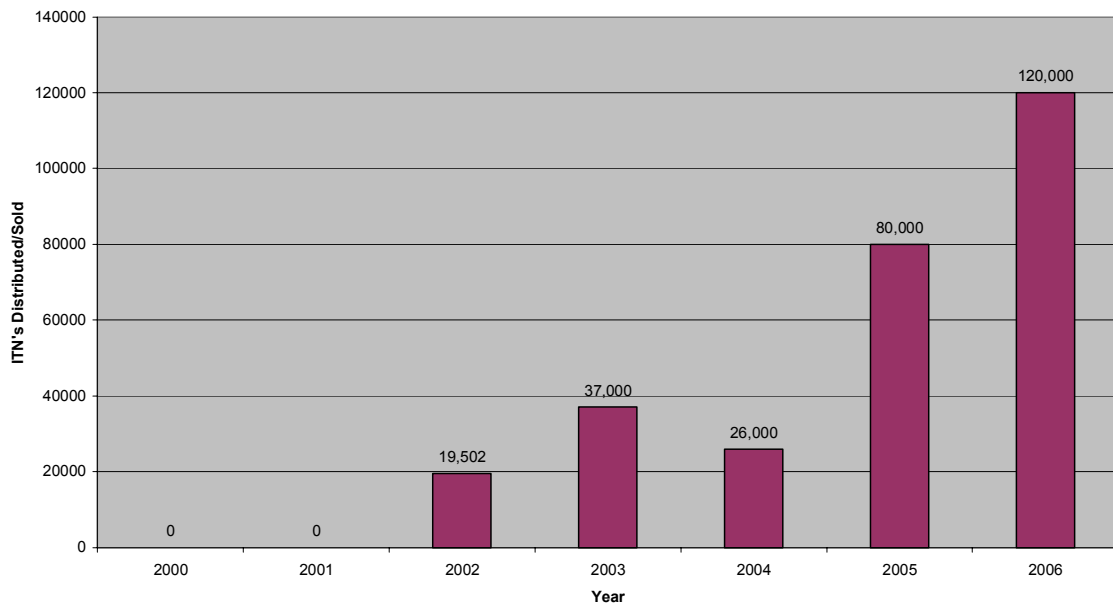
Table 2.7: Indoor Residual Spraying Coverage by Region

Regions	2004/2005		2005/2006		2006/2007	
	Population protected (%)	Spray Coverage (%)	Population protected (%)	Spray coverage (%)	Population protected (%)	Spray coverage (%)
Ohangwena	44.3	78.9	44.6	82.0	81.9	94.6
Kavango	84.0	71.6	83.4	80.0	96.1	93
Kunene	43.0	83.0	43.5	61.4	50.2	83
Otjozondjupa	-	92.0	-	93.9	89.7	73
Omusati	35.4	60.6	60.7	89.7	70.9	90
Oshikoto	50.8	50.4	80.3	98.2	92.7	73
Oshana	89.4	56.0	63.0	57.7	84.2	79
Caprivi	98.8	81.4	-	80.3	70.4	87
Namibia	55.7	69.2	59.8	82.0	77	86.6

Namibia: IRS Coverage (%)



Namibia: ITN's Distributed/Sold



2.8 South Africa

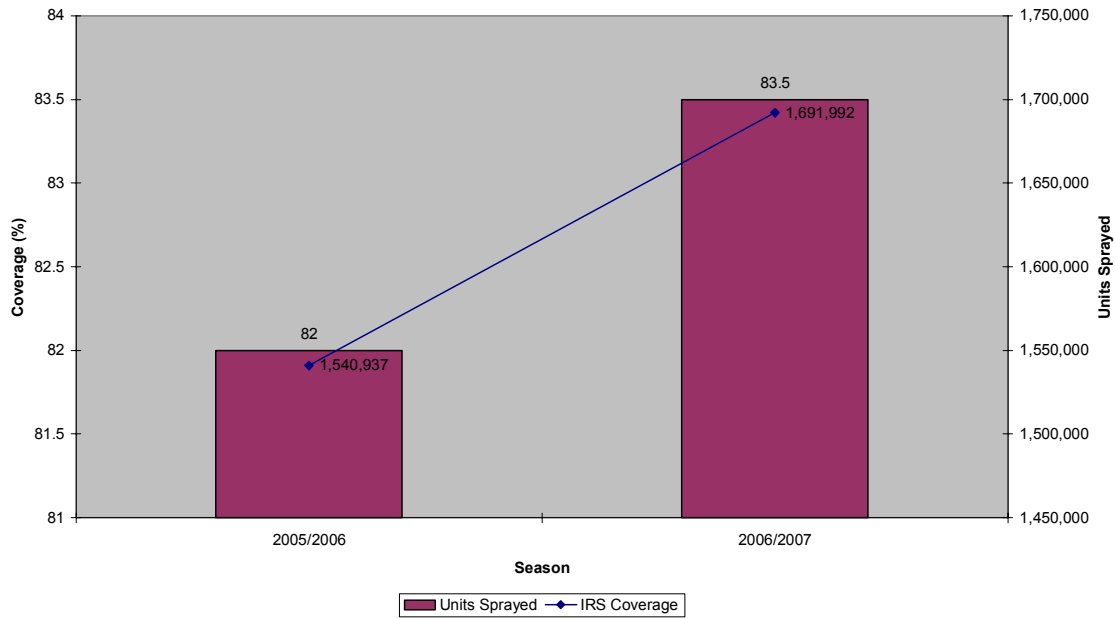
Malaria is generally limited to the far north eastern corners of South Africa where the Limpopo, Mpumalanga and KwaZulu-Natal provinces border with neighbouring countries. In 1996 South Africa stopped using DDT due to international pressures and the desire to try an alternative control mechanism. Shortly after this, SA had a massive malaria outbreak. There was an eight-fold increase in malaria deaths from 1996 to 1999. The number of malaria cases increased at a similar rate from 5,000 per annum to more than 60,000. However, in 2000 SA reintroduced indoor residual spraying with DDT, amidst international pressures to ban the insecticide, and the number of cases dropped by a remarkable 80 per cent (see Table 2.8 below).

South Africa employs a mosaic system of IRS using a combination of DDT (typically for mud structures), synthetic pyrethroids (for western style houses) and carbamates where resistance to the other 'frontline' insecticides has occurred.

Table 2.8: South Africa Malaria Morbidity and Mortality Trends

Year	Cases	Deaths	Case Fatality Rate (%)
1999/2000	61725	461	0.7
2000/2001	37245	208	0.6
2001/2002	18381	119	0.6
2002/2003	10944	74	0.7
2003/2004	15237	154	1
2004/2005	9485	71	0.7
2005/2006	12295	94	0.8

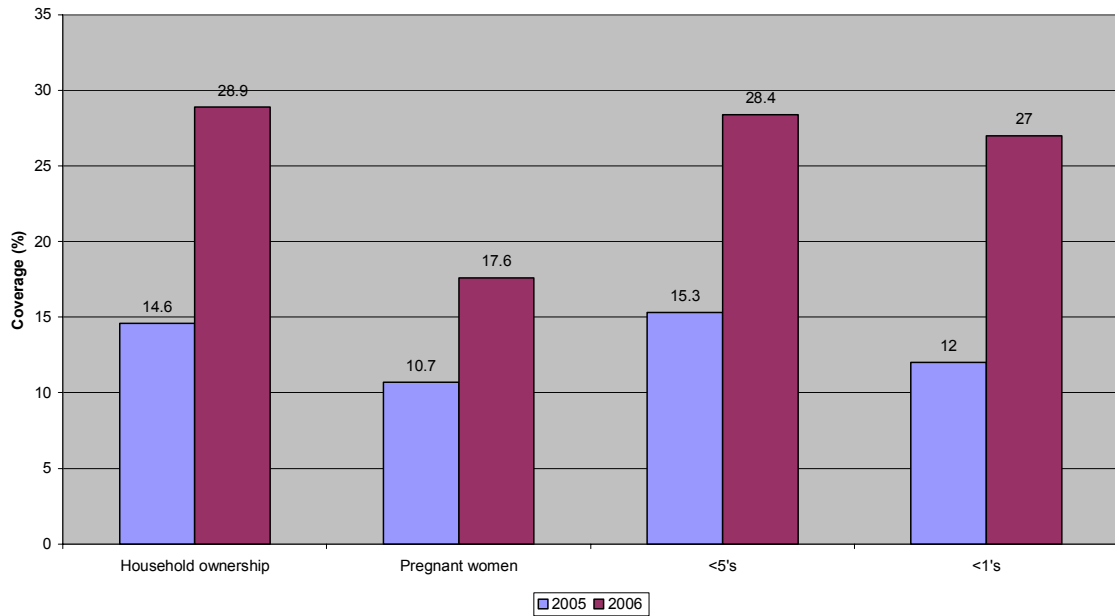
South Africa: IRS Coverage



2.9 Tanzania

Malaria is found in all areas of Tanzania except in areas above 1800 metres. Tanzania has an integrated vector control strategy however the emphasis remains on insecticide treated nets as the primary means of intervention. Tanzania's ITN coverage indicators for 2005 and 2006 can be seen in the graph below.

ITN coverage indicators



Tanzania officially adopted Artemether Lumefantrine as its first line treatment on 15 December 2006. Tanzania has distributed over 10.5 million doses. The second line drug, where Artemether Lumefantrine has failed or is contraindicated, is quinine and Tanzania continues to use quinine to treat severe malaria. The drug of choice for pregnant women in the first trimester and children weighing below 5 Kg is Quinine and the drug of choice for intermittent preventive treatment (IPT) is sulfadoxine pyrimethamine (SP).

2.9.1 Zanzibar

Malaria in Zanzibar has been characterized by perennial stable transmission. However, transmission appears to be changing from hyper/holo-endemic to hypo-endemic. Zanzibar adopts the same treatment policies as mainland Tanzania, using Artemether Lumefantrine as its first line treatment, quinine as its second line treatment and for severe malaria, and sulfadoxine pyrimethamine for intermittent preventive treatment. Zanzibar also emphasises the use of nets as its primary intervention and focuses on mass distribution of LLINs. However, in July 2006 Zanzibar adopted an IRS programme with favourable results.

Table 2.9: Zanzibar Summary of Malaria Indicators

Indicator	Baseline 2002	Achieved 2006
% of <5's using ITN's/LLIN's	0	89.7
% of households owning at least one ITN/LLIN	3	66.7
% of households protected by IRS	0	96 (Round 1) 91.3 (Round 2) (Round 3 ongoing)
% of <5's fever within 24 hours	7	13.4 (2005)
% of <5's uncomplicated malaria STG	42	80
% of severe cases treated STG	73	69 (2005)
% of confirmed microscopy and RDT	25	100

2.10 Uganda

Malaria is widespread throughout Uganda and has historically been a very serious health problem. Malaria currently poses the most significant threat to the health of the population and accounts for 30-50% of OPD attendance and 30% of in-patient admissions. The disease is also the most significant determinant of childhood deaths accounting for 20-23% of in-patient deaths in children under five years (23% and 11% of deaths among children under 5 in high and medium malaria transmission areas respectively). Malaria is also a significant determinant of adult deaths accounting for 9-14% of in-patient deaths amongst adults. There are approximately 70,000-110,000 malaria deaths per year or approximately 320 deaths per day.

Indoor residual spraying using DDT was first used in a pilot malaria eradication project in the south west of Uganda in 1959 and 1963. The programme nearly led to the eradication of malaria with the anopheles funestus vector being practically eliminated and the anopheles gambiae densities dramatically reduced. However, despite the encouraging results the programme was stopped in the early 1960's.

Recently an environmental impact assessment for DDT was completed and after a public hearing the National Environment Management Authority (NEMA) gave the Ministry of Health the go ahead to use DDT for malaria control. Uganda recently embarked on a national campaign to produce policy guidelines and monitoring checklists for IRS including DDT. Uganda has achieved high coverage reporting, in that more than 95% of targeted homes have been sprayed in all areas – protecting more than 1 million people in the past 12 months. As a result of the vector control programme, Uganda has reported a rapid decline of malaria parasitaemia.

Table 2.10: Uganda Summary IRS Coverage Data (July'06 – April'07)

District	Households Sprayed	Population Protected
Kabale 1st round	103,329	488,509
Kabale (2nd round – Targeted 60%- 66,000 hhs)	76,084	364,784
Kanungu (75% of district targeted)	45,321	191,399
Kitgum (IDP Camps only)	84,007	371,846
Total	291,935	1,341,929

In the past season, 1.8 million nets were distributed country-wide with the help of the second round grant from the Global Fund. 655,000 LLINs were procured and distributed with the help of funding from the President's Malaria Initiative. The distribution of 580,000 LLINs in 26 districts from Malaria No More is in progress. AFFORD has given out 60,000 LLINs to 12 districts for distribution through NGOs and CSOs. AFFORD is supporting the distribution of subsidised LLINs in selected commercial outlets in large urban centres. 505,573 (84%) nets were re-treated in Round 3 in 27 districts in September 2006. From 1 bundled ITN brand in 2002, today there are 5 LLINs and 4 bundled ITNs on the market. From 1 branded net in 2006, today there are >20 branded nets in the commercial market. Operational research on ITN retention and use was conducted. The NDA was provided with a machine for testing insecticide in ITNs. More than 60% of the net market is non-treated nets while LLINs account for 36% of the ITNs sold in the country in 2006. It should be noted that Uganda lost the Global Fund Round 2, Phase 2 funding for the scale up of ITNs and IRS interventions.

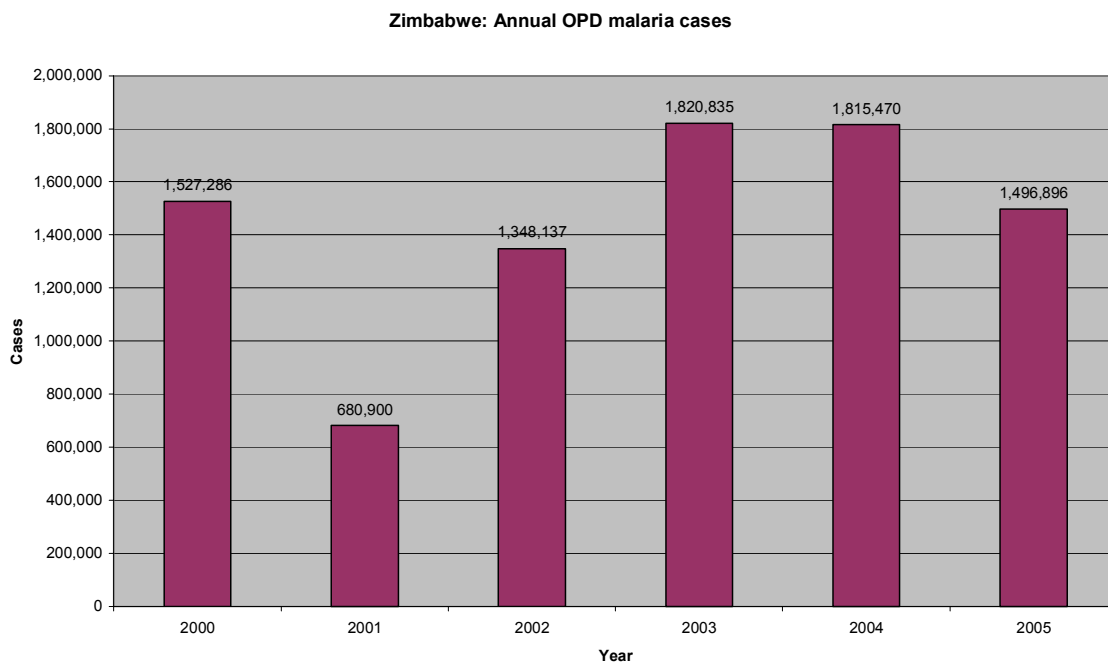
2.11 Zambia

Malaria is endemic throughout Zambia with the entire population at risk. Approximately 4 million clinical cases of malaria occur each year in Zambia with 8,000 deaths. Malaria accounts for 45% of all OPD visits and 47% of all hospital admissions annually. Zambia has achieved a 10% reduction in malaria cases since 2003. In 2003 Zambia distributed

approximately 14,000 insecticide treated bed nets (ITNs) and this year Zambia estimates that they are on track to distribute 3,000,000 nets. Zambia attributes this to a reduction in the price of nets (from K15,000 to K3,000) and the introduction of free distribution of LLITNs with an effort to try and achieve at least 3 LLITNs per household. According to a malaria information survey conducted in 2006, approximately 44% of households in Zambia own at least one ITN. IRS is conducted in 15 selected districts and Zambia hopes to scale this up to 22 by 2008. Zambia reports that 87% of targeted structures were sprayed in the 2006/07 season.

2.12 Zimbabwe

Zimbabwe has a total population of approximately 12.5 million people. Approximately 50% of the population is estimated to be at risk of malaria.



Zimbabwe has a long history of malaria control, especially IRS dating back to 1948, but recent events threaten to destabilise and disrupt what has traditionally been one of Africa's best control programmes.

3. Discussion

The east and southern African malaria conference certainly has its benefits. One of the most important benefits is that countries are given the opportunity to learn what the successful strategies are in countries that have been able to control their malaria.

Furthermore, the conference establishes and reinforces existing regional initiatives, which is imperative for the control of malaria in a region. It is therefore encouraging that the east and southern African conferences have been joined together and one can only hope

that other sub-Saharan African countries suffering from the burden of malaria also join the discussions.

A major concern is that the use of ACT's are still only up to a health facility level and are not used in the home management of malaria. Furthermore, many countries have prohibited the use of ACT's in the private for-profit sector.

It was recognised that IRS should be used in both urban and rural settings and in stable as well as unstable transmission areas as long as feasible, effective and sustainable.

The stated objective of this year's conference to accelerate access to proven malaria control interventions towards universal access could be severely compromised if fundamental checks and balances are neglected. Although funding is a necessary component in order to achieve universal access, it is not sufficient in itself to control malaria. Without transparency as to how money will be spent long-term, malaria control efforts could potentially be undermined. More specifically, in order to achieve this year's stated objective, it is vital for governments to:

- Measure outcomes in terms of reduced rates of morbidity and mortality in addition to inputs such as the number of nets and treatments distributed,
- Monitor and evaluate interventions in order to determine what policies are working and
- Where appropriate adjust policies that are not working accordingly.

Furthermore, in order to be held accountable for spending public money, governments must be in a position to:

- Respond to queries about how they spend public funds.
- Publish detailed budgets, contracts and outcome evaluations.
- Supply the OECD with up to date and accurate information on their public health spending.

Without these necessary checks and balances the malaria community will be unable to assess whether policies are working and this may result in a waste of resources.